

NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent agency of the Federal Government established to promote and advance scientific and engineering progress. The NSF sponsors and funds scientific and engineering research and education projects and supports cooperative research to gain new understanding of the behavior of the Earth's atmosphere and oceans. NSF does not itself conduct research but funds research performed by scientists at universities and other entities. In addition, NSF provides support for the maintenance and operation of the National Center for Atmospheric Research (NCAR) which is devoted to large-scale atmospheric research projects conducted in cooperation with universities and other federal, state and/or local organizations.

The Division of Atmospheric Sciences manages NSF's basic atmospheric research support. This research focuses on new and fundamental knowledge needed to better understand the atmosphere and related sciences and to manage atmospheric science programs including natural disaster reduction, space weather, global change, and air quality.

Natural Disaster Reduction. NSF supports two interagency programs under natural disaster reduction and mitigation: the United States Weather Research Program (USWRP) and the National Space Weather Program (NSWP).

The USWRP is an interagency effort to perform the research and technology transfer needed to improve the delivery of weather services to the country. Participating agencies include NSF, National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA) and Navy's Office of Naval Research (ONR). NSF supports fundamental and applied research to meet the USWRP objectives. Initial foci are:

- better understanding and forecasting of hurricane track and intensity;
- better quantitative precipitation forecasting;
- optimal use of observations in numerical models; and
- the societal/economic impacts of improved weather information.

In FY 1999, NSF jointly supported with NOAA approximately 30 research projects focused on the above topics. The total research support for FY 1999

was \$14.9 million. In FY 2000, support of this research is expected to increase to \$15.3 million.

The objective of the NSWP is to perform the research and technology transfer needed to improve the specification and forecasts of space weather events that can cause disruption and failure of space-borne and ground-based technological systems and can endanger human health. Participating agencies are: NSF, NASA, NOAA, Federal Aviation Administration (FAA), Department of Defense (DOD) -Air Force and Navy's ONR, Department of Energy, and Department of the Interior. The FY 1999 shared budget was \$14.0 million with NSF supplying \$2.4 million and DOD providing \$0.3 million. The total funding for FY 2000 is expected to increase slightly to \$14.3 million.

Global Change. Under the United States Global Change Research Program (USGCRP), NSF programs support research and related activities that advance fundamental understanding of dynamic physical, biological, and socioeconomic systems as well as interactions among those systems. In addition to research on Earth system processes and the consequences of changes in those systems, NSF programs facilitate data acquisition and data management activities necessary for basic research on global change, promote the enhancement of modeling designed to improve representations of Earth system interactions, and develop advanced analytic methods to facilitate fundamental research. NSF also supports fundamental research on the gen-

eral processes used by governments and other organizations to identify and evaluate different types of policies for mitigation, adaptation, and other responses to changing global environmental conditions. The total NSF FY 1999 USGCRP funding was \$181.7 million and in FY 2000 is expected to increase to \$187.5 million. The Division of Atmospheric Sciences USGCRP funding for FY 1999 was \$44.0 million with FY 2000 funding expected to be \$45.3 million.

Air Quality. NSF supported fundamental research in the area of air quality helps develop improved understanding of the sources, formation, and atmospheric processing of ambient air pollutants. Atmospheric oxidant species (and their precursors), sulfur dioxide, nitrogen oxides, carbon monoxide, fine particles, and acid deposition (and its precursors) are important atmospheric constituents that influence air quality. Field experiments, laboratory studies, instrumentation development, new methods of chemical analysis, and improved models of atmospheric chemical transport and depositional phenomena are examples of air quality research supported by NSF. These categories provide scientific and technical input for management and control of atmospheric pollutant gases and particles. NSF funding for FY 1999 was \$1.5 million and is expected to stay the same for FY 2000.

NOTE: NSF budget data is not captured in Tables 2.1-2.5.